**IN THE CLAIMS**

1. (Currently Amended) An electron emitter comprising:

a p region;

a dielectric layer formed ~~directly above~~ in contact with said p region wherein a thickness of said dielectric layer is such that a dielectric breakdown field $F_b$ of said dielectric layer substantially meets the condition $F_b \geq 1.5 * 10^7$ V/cm;

a metallic layer formed ~~directly above~~ in contact with said dielectric layer; and

means for emitting electrons through said metallic layer.

2. (Original) The electron emitter according to claim 1, further comprising:

a substrate below said p region.

3. (Original) The electron emitter according to claim 1 wherein said p region is formed from a semiconductor.

4. (Original) The electron emitter according to claim 3, wherein said semiconductor includes at least one of Si, Ge, GaP, InP, InGaAs and InGaP.

5. (Currently Amended) The electron emitter according to claim 3, wherein a hole concentration level of said p region ranges substantially between $10^{16}$ and $10^{19}$ $cm^{-3}$.

6. (Original) The electron emitter according to claim 1, further comprising:

a p electrode formed above and making electrical contact with said p region.

7. (Original) The electron emitter according to claim 1, further comprising:

an M electrode formed above and making electrical contact with said metallic layer.

8. (Original) The electron emitter according to claim 1, further comprising an n+ region formed above a substrate such that said p region is formed within said n+ region.

9. (Original) The electron emitter according to claim 8, wherein an electron concentration level of said n+ region is greater than a hole concentration level of said p region.

10. (Original) The electron emitter according to claim 8, wherein said n+ region is formed from materials with wider band gap than said p region.

11. (Original) The electron emitter according to claim 8, wherein a thickness of said p region is less than a diffusion length of non-equilibrium electrons in said p region.

12. (Original) The electron emitter according to claim 8, wherein a thickness of said metallic layer is on the order of or less than a mean free path for electron energy.

13. (Original) The electron emitter according to claim 8 further comprising:

an n electrode formed above and making electrical contact with said n+ region.

14. (Currently Amended) The electron emitter according to claim 1, wherein said metallic layer ~~240~~ is formed from materials including at least one of Au, Ag, Al, Gd, W, Pt, Ir, Pd and alloys thereof.

15-20. (Previously cancelled.)

21. (Currently Amended) An electron emitter comprising:

a p region;

a dielectric layer formed ~~directly above~~ in contact with said p region wherein a thickness of said dielectric layer is such that a dielectric breakdown field $F_b$ of said dielectric layer substantially meets the condition $F_b \geq 1.5 * 10^7$ V/cm;

a metallic layer formed ~~directly above~~ in contact with said dielectric layer; and

at least one voltage biasing source electrically connected to said p region and said metallic layer such that electrons pass through said metallic layer.

22. (Original) The electron emitter according to claim 21, wherein said at least one voltage biasing source is connected such that said electrons tunnel through said dielectric layer prior to passing to said metallic layer.

23. (Original) The electron emitter according to claim 21, further comprising at least one of:

a p electrode formed above and making electrical contact with said p region; and

an M electrode formed above and making electrical contact with said metallic layer.

24. (Original) The electron emitter according to claim 21, further comprising:

an n+ region such that said p region is formed within said n+ region.

25. (Original) The electron emitter according to claim 24, wherein an electron concentration level of said n+ region is greater than a hole concentration level of said p region.

26. (Original) The electron emitter according to claim 24, wherein said n+ region is formed from materials with wider band gap than said p region.

27. (Original) The electron emitter according to claim 24, wherein a thickness of said p region is less than a diffusion length of non-equilibrium electrons in said p region.

28. (Original) The electron emitter according to claim 24, further comprising:

an n electrode formed above and making electrical contact with said n+ region.

29. (Original) The electron emitter according to claim 21, wherein a thickness of said metallic layer is on the order of or less than a mean free path for electron energy.

Cancel claims 30 and 31.

32-33 (Previously cancelled.)

34. (Original) An electron emitter comprising:

a p region wherein an acceptor hole concentration in the p region ranges substantially between $10^{16}cm^{-3}$ and $10^{18}cm^{-3}$;

a dielectric region formed directly above said p region wherein a thickness of said dielectric region ranges substantially between 1.5 nanometers and 2.0 nanometers and wherein a dielectric breakdown field $F_b$ of said dielectric region substantially meets the condition $F_b \geq 1.5 * 10^7$ V/cm wherein said dielectric region is formed from materials including at least one of $SiO_2$, $Al_2O_3$ and alloys thereof;

a metallic layer formed directly above said dielectric region wherein a thickness of said metallic layer is less than a range of between 2.0 nanometers and 5.0 nanometers wherein said metallic layer is formed from materials including at least one of Au, Ag, Al, Gd, W, Pt, Ir, Pd and alloys thereof;

a substrate below said p region; and

at least one voltage source electrically connected between said p region and said metallic layer such that electrons pass through said metallic layer.

35. (Currently Amended) The electron emitter according to claim ~~1~~2, further comprising

an n region formed above said substrate such that said p region is formed above said n region wherein a donor concentration of said of said n region is greater than the acceptor hole concentration; and

at least one voltage source electrically connected between said n region and said metallic layer.